

SOCIETIES AND ACADEMIES

LONDON

Mathematical Society, February 8.—Mr. C. W. Merrifield, F.R.S., vice-president, in the chair.—The following communications were made to the Society:—On the area of the quadrangle formed by the four points of intersection of two conics, by C. Leudesdorf.—A certain series, by Mr. J. W. L.

Glaisher, F.R.S.—The differential equation $\frac{dx}{\sqrt{X}} + \frac{dy}{\sqrt{Y}} = 0$, by Prof. Cayley, F.R.S.—On the classification of loci, and a theorem in residuation, by Prof. Clifford, F.R.S.

Zoological Society, February 6.—Osbert Salvin, F.R.S., in the chair.—Mr. Slater exhibited and made remarks on some unnoticed characters in the original and unique specimen of Comrie's Manucode (*Manucodia comrii*, P.Z.S., 1876, p. 459).—Mr. Howard Saunders exhibited a specimen of the Panay Sooty Tern (*Sterna anastheta*), which had been obtained on the English Coast, and was the first recorded occurrence of this bird in the British Islands.—Dr. A. Günther, F.R.S., read a memoir on the tortoises collected by Commander Cookson, R.N., during the visit of H.M.S. *Peterel* to the Galapagos Islands. The main results of Commander Cookson's visit consisted in giving us a knowledge of the tortoise of Abingdon Island (*Testudo abingdoni*) and of the tortoise of the north of Albemarle Island (*T. microphyes*).—A communication was read from Mr. Robert Collett containing an account of his observations on *Phylloscopus borealis*, as met with on the coast of the Varanger Fjord and adjacent parts of Finnmark.—Mr. Slater read a note on an apparently new species of spur-winged goose of the genus *Plectropterus*, proposed to be called *P. niger*, founded on two examples living in the Society's Gardens, which had been presented to the Society by Lieut.-Gen. A. V. Cunningham.—Prof. A. H. Garrod read a paper on the mechanism of the intervertebral substance and on some effects resulting from the erect position of man.—A communication was read from Sir Victor Brooke, containing notes on the small rusine deer of the Philippine Islands, and giving the description of a new species proposed to be called *Cervus nigriscans*, of which a female example was recently living in the Society's Gardens.—A paper by Mr. O. Salvin and Mr. Ducane Godman was read giving the description of twelve new species and a new genus of butterflies from Central America.—Dr. Günther gave an account of the zoological collection made during the visit of H.M.S. *Peterel* to the Galapagos Islands, which had been worked out by himself and his assistants in the Zoological Department of the British Museum.—Mr. R. B. Sharpe communicated the description of a new species of pheasant of the genus *Lophophanes* and of a new species of *Pitta* from the Lawas River, North-west Borneo. Mr. Sharpe proposed to call the former *L. castaneicaudatus*, and the *Pitta*, *Pitta ussheri*.

Geological Society, January 10.—Prof. P. Martin Duncan, F.R.S., president, in the chair.—Frederick Tendron and David Thomas were elected Fellows, and Dr. J. F. Brandt, of St. Petersburg, Dr. C. W. Gumbel, of Munich, and Prof. Eduard Suess, of Vienna, Foreign Members of the Society.—On gigantic land-tortoises and a small fresh-water species from the ossiferous caverns of Malta, together with a list of the fossil fauna, and a note on Chelonian remains from the rock-cavities of Gibraltar, by A. Leith Adams, F.R.S., Professor of Zoology in the Royal College of Science, Dublin. The author described three distinct species of tortoises from the Maltese rock-cavities, one of which was of gigantic proportions, and equalled in size any of the living or extinct land Chelonians from the Indian or Pacific Islands. The characteristic peculiarity in the two larger species is a greater robustness of the long bones as compared with the denizens of the Mascarene and Galapagos Islands, with which he had been enabled to contrast them. The largest, on that account, he had named *T. robusta*; it rivalled the gigantic *Testudo ephippium* (Günther) in size, showing affinities to it in a few minor characters. A smaller species, *T. Spratti*, and a small *Lutremys*, not distinguishable, as far as the few remains extend, from the recent *L. europaea*, besides many fragments of shields of tortoises of various dimensions, had been obtained. These Chelonians were found in conjunction with the remains of the dwarf elephants and other members of the remarkable fauna, collected by Admiral Spratt and the author in the ossiferous rock-cavities of Zebbug, Mnaidra, Benghisa, &c. The paper contained a list of the animal remains hitherto recorded from the Maltese fissure caverns, including three species of dwarf elephants, two species of *Hippo-*

potamus, two gigantic species of *Myoxus*, a gigantic swan, and other animal remains; and further, a Note on some Chelonian remains from the rock-fissures of Gibraltar.—On the Corallian rocks of England," by the Rev. J. F. Blake, F.G.S., and W. H. Hudleston, F.G.S. The object of the paper was to describe the rock masses existing between the Oxford and Kimmeridge clays as exhibited throughout England. They occur in five distinct areas which were treated separately. Where best developed, as in Yorkshire and at Weymouth, the series is much more varied than the usual nomenclature indicates; in both instances a lower mass of limestone, distinct from that representing the "coral rag" of Central England, is present. In Yorkshire, especially, this limestone is of great importance, and is separated by a "middle calc. grit" from the upper limestone series. These upper limestones were also shown to be separable into two very distinct divisions, especially by their fauna, viz., the "coralline oolite" and "coral rag," which last term is here applied in a restricted sense only to true coral-bearing or inter-coralline beds. The upper beds, called "supra-coralline," were shown, where present, to be of great interest and importance—and their fauna was for the first time indicated—and the iron-ores of Abbotsbury and Westbury were proved to belong to this portion of the series. The fauna of the Corallian rocks was shown to be very markedly Oxfordian in the lower portions, and equally Kimmeridgian in the upper, while but a limited portion only could be said to have a fauna of its own. The whole series was deposited in lenticular masses of traceable size.

Physical Society, February 3.—Prof. G. C. Foster, president, in the chair.—The following candidate was elected a member of the Society:—Mr. J. Norman Lockyer, F.R.S.—Prof. Osborne Reynolds exhibited a number of experiments in relation to vortex motion in fluids. They have been gradually developed during the last few years, but are still in a very incomplete state, and he hopes that others will join him in the inquiry. Probably one reason why so little progress has been made in the determination of the elementary laws of fluid-motion is that mathematicians have been without experimental data on which to found their calculations. The well-known rings formed by puffs of smoke have been studied by many high authorities, but not with a view to their general bearing on this subject. Prof. Reynolds first showed smoke rings and their interference by means of the apparatus devised by Prof. Tait, and added that although the theory of smoke rings does not imply that vortex motion is peculiar to vapours, their existence in liquids was only pointed out by Mr. H. Deacon at a comparatively recent date. In studying the action of the screw-propeller, Prof. Reynolds noticed the systematic manner in which the form of a disc moved obliquely through water is retained by the track of air which it produces. If a flat disc be supported on a light frame and caused to move rapidly through water the motion ceases on withdrawing the hand suddenly; but if this be done gradually the motion continues. By passing a coloured liquid down a fine tube to the back of the disc, he found that a vortex ring is always formed, which passes to the rear of the disc, and the same effect is produced by dropping water from a height into water covered with a coloured liquid. In a trough about six feet long and at one end of which was a horizontal tube closed with sheet india-rubber, air rings were formed by introducing air into the tube and then striking the india-rubber externally by means of a flat board, and it was shown that a ring is capable of propelling a vane placed in its course, to the front of which it never advances. If the air be replaced by a coloured liquid the ring travels with considerable velocity and the motion of a solid body of the density of water is in no degree comparable. If a ring travels through a part of a liquid which has previously been coloured, it causes no motion of translation, and Prof. Reynolds concludes that no resistance is offered to their motion. Nevertheless the motion is gradually stopped, but the ring is constantly enlarging by gathering water as it travels, and its momentum remains nearly constant. After adverting to the methods adopted to ascertain the direction and velocity of motion, the initial form of the rings was shown to be a spheroid. A solid of this form, however, is very slow in its passage through water, and he considers this to be due to friction. He has succeeded in imitating the form of the ring by causing a disc, surrounded by pieces of ribbon, to move through water. Finally, Prof. Reynolds referred to Sir William Thomson's researches on the interference of two rings, and showed that the oscillating rings so produced can be formed in liquids or gases by employing an oval in place of a circular aperture.—The Annual General Meeting of the Society

was then held.—The president read the report of the Council, of which the following is a brief abstract:—The Council points with satisfaction to the number and interest of the papers read before the Society, and a brief summary is given of the more important. The Society has to regret the loss of three of its members, Mr. David Forbes, F.R.S., Mr. A. S. Hobson, and Mr. Arthur Pinn. The publication of a new edition of Prof. Everett's work and of a complete edition of Sir Charles Wheatstone's writings is announced, and the Council hopes shortly to undertake the translation of scientific papers from foreign sources to be published in its proceedings.—The following Officers and Council were elected for the ensuing year:—President, Prof. G. C. Foster, F.R.S. Vice-Presidents: Profs. W. G. Adams, F.R.S., and J. H. Gladstone, F.R.S., Mr. W. Spottiswoode, LL.D., F.R.S., Sir W. Thomson, LL.D., F.R.S., and Dr. W. H. Stone. Secretaries: Prof. A. W. Reinold and W. C. Roberts, F.R.S. Treasurer, Dr. E. Atkinson. Demonstrator, Prof. F. Guthrie, F.R.S. Other Members of Council: Prof. W. F. Barrett, Latimer Clark, Major Festing, W. Huggins, D.C.L., F.R.S., Prof. Kennedy, O. J. Lodge, Prof. H. MacLeod, Prof. B. Stewart, LL.D., F.R.S., Prof. Unwin, and E. O. W. Whitehouse.—The proceedings terminated with votes of thanks to the Lords of the Committee of Council on Education for the use of the Physical Laboratory at South Kensington and to the several officers of the Society.

Royal Microscopical Society, February 7.—Anniversary meeting.—H. C. Sorby, F.R.S., president, in the chair.—The president delivered the annual address, in which, after reference to the memory of those of their number deceased during the past year, he gave an interesting account of his recent researches into the composition and origin of the loose materials which form the sands and clays of this country, and also of those composing the sandstones and stratified rocks.—The result of the ballot for officers and council for the ensuing year was as follows:—President, Mr. H. C. Sorby. Vice-presidents: Dr. L. S. Beale, Sir John Lubbock, Bart., Rev. W. H. Dallinger, and Mr. H. Powell. Treasurer, Mr. John W. Stephenson. Hon. Secretaries: Mr. H. J. Slack and Mr. Chas. Stewart. Council: Dr. Robert Braithwaite, Dr. Lawson, Dr. Millar, Messrs. Bevington, Brooke, F. Crisp, Ingpen, E. W. Jones, Loy, McIntyre, Thos. Palmer, and F. H. Ward. Assistant Secretary, Mr. Walter W. Reeves.

Institution of Civil Engineers, February 6.—Mr. George Robert Stephenson, president, in the chair.—The paper read was on "The Sewage Question," by Mr. C. Norman Bazalgette.

ROME

R. Accademia dei Lincei, January 7.—Second appendix to memoir on the construction, properties, and applications of a constant inductor, by M. Volpicelli.—On complete elliptic integrals, by Prof. Smith.—On the small oscillations of an entirely free rigid body, by M. Cerruti.—On the anatomy and physiology of the retina (continued), by M. Franz Boll.—On the spinal medulla and the electric lobe of the torpedo, by M. Reichenheim.—Geological studies on the group of the Gran Paradiso.—Rational catalogue of the rocks of Friuli, by M. Taramelli.

PARIS

Academy of Sciences, February 5.—M. Peligot in the chair.—M. Duchartre presented the second and last part of the second edition of his "Éléments de Botanique." The following papers were read:—On the fundamental invariants of the binary form of the eighth degree, by Prof. Sylvester.—Preliminaries of a comparative study of living and fossil European oaks; definition of present races, by M. De Saporta.—On monochlorised oxide of methyl, by M. Friedel.—Composition and origin of diamantiferous sand of Du Toit's Pan, in South Africa, by M. Meunier. Geologists have assigned a deep origin, representing them as the residue of alteration of pyrogenous rocks emitted like lava. The author's analysis gives, besides minerals proper, a number of complex rocks which cannot have been formed at once in the state of mixture by the same causes. Each of them must have been removed from a special deposit, then carried to the point where mixture took place. These sands belong to the so-called *vertical alluvia*, and are related in formation to the Kaolinic sands in the environs of Paris.—On the preparation and use of the liquid for washing vines attacked by Phylloxera, by M. Boiteau.—MM. André and Angot expressed a desire to be sent to San Francisco to observe the transit of

Mercury on May 5, 1878. They hope thus to render the study of the next Venus transit more fruitful.—Diathermanicity of metals and of paper, by M. Aymonnet. They are not athermanous, as generally thought. They are more diathermanous for dark heat from metallic bodies raised to a temperature under 100° than for luminous calorific radiations or those near red. They have weaker absorbent powers than water. It is possible to find a mathematical relation between the absorbent power of a body and its coefficient of conductivity.—Note on the presence of ammonia in cast steel, by M. Regnard. Ingots of steel newly broken gave a distinct smell of ammonia, with perceptible noise in escape of the gas, and bubbles in soapy water if applied. The appearance of the fracture in all such cases was crystalline, varying slightly from periphery to centre; the liberation was greatest at centre. Soft steels in general did not give the phenomenon, nor did ingots previously annealed. Analysis of the gas showed it to be nearly pure hydrogen, with perhaps a few traces of acetylene.—On the active principle of *Strophantus hispidus*, or Inee, by MM. Hardy and Gallois. This is the plant used by the Pahonias in poisoning their arrows. The isolated body, called *incine*, has not the same physiological properties as *Strophantine* (so-called by Fraser). Injected in considerable quantity under the skin of a frog's foot, it does not stop the heart's movements.—Immediate disorders produced by injections of pure fuchsine into the blood, by MM. Feltz and Ritter. The nervous disorders, like those of drunkenness, cannot, the authors now think, be due to embolic lesion (in the capillaries), but to direct impression of the nervous system by the fuchsine itself.—Structure and mineralogical composition of variolite of Durance, by M. Michel Levy. The globules of variolite are not petro-silicious. By its petrographic affinities it seems to be a compact term of the series of euphotides. It presents an interesting association of several varieties of amphibole and pyroxene; also a new example of spherulites entirely crystallised.—On the intestinal anguillule (*Anguillula intestinalis*), a new nematoid worm found by Dr. Normand in persons attacked by diarrhoea of Cochinchina, by M. Bavy. It is distinct from, and much less abundant than, the *Anguillula stercoralis*.—On the minute phenomena of fecundation, by M. Fél. All the phenomena are reduced to two typical cases.—On *Filaria hematica* (Hæmatozoa), by MM. Galeb and Pourquier. The authors found filaria in the blood of the foetus of a bitch whose heart was teeming with them; the embryos doubtless passed through from mother to offspring. This explanation destroys the idea of verminous diathesis, and of spontaneous generation, called in to explain the genesis of such hæmatozoa. The authors also verify M. Davaine's view that the nematoid worms circulating in the vessels of certain dogs are larvæ of the hæmatic filaria.—Determination of ammonia in the air and in meteoric waters at Montsouris, by M. Levy.—On two new species of Ibis, from Cambodge, by M. Oustalet.—On a new sounding-line, by M. Tardieu.

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